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Forest Insect Investigations

P. O. Box 3010, Stanford University, Calif. - June 1, 1926.

COMPLETE YOUR FIELD WORK BY BETTER RECORDS.

By
H. E. Burke

We are now at the commencement of another season of field work. As usual we have spent the entire winter season trying to write up the results of the observations made during the field work of last season and again, as usual, we did not quite make it. Every year we find ourselves just a little further behind. Ten chances to one if we do not put our observations in proper shape for publication they never will be published and the work so far as it will ever do anyone else any good will be lost. How can we do better?

Isn't the real trouble another case of "haste makes waste"? We are in too much of a hurry to get from one job to the other. Why not spend another day on the job and put the observations in as complete a form as it is possible to do so in the field. Every point is fresh in our mind, or soon can be made so, and we will save many small items that will not be clear if we wait until we get back to the office. These seemingly small items of the present often become the real important ones of the future.

"One thing at a time and that done well" is as good a rule for the forest entomologist as anyone else. The commencement of the field season should be our time for good resolutions. Better records of field work is a good one for us. Providing of course that we keep it.

NORTHWESTERN WORKERS TO HOLD ANNUAL MEETING.

The Northwestern Association of Horticulturists, Entomologists and Plant Pathologists has tentatively arranged to hold its next annual meeting at Tacoma, Washington, June 28-30 inclusive. The arrangements for the meeting are in the hands of Secretary H.D. Locklin, Western Washington Experiment Station, Puyallup, Washington. Forest entomologists are cordially invited to attend. Our good friend Ralph Hopping expects to be present.

A.J.Jaenicke.

INSECTS EATING POSTAGE STAMPS.

May 13th, Cashier Cone of the San Francisco Post Office sent out an S.O.S. for help to save the Government's \$2,000,000 stock of postage stamps. William Hodge of the District 5 Forest Service Office caught the message, called up the Palo Alto Forest Insect Laboratory and promptly started an investigation.

The stamps are stored in the basement of the Post Office Building in the heart of San Francisco. The walls, ceiling and floor of the room are concrete, asphalt or other non-wood material. Several bundles of stamps were found to be more or less eaten and the sheets composing the bundles were stuck together. On one wall, running from about three feet down to the floor, was a Termite nest. The bundles of stamps had rested on a bench against the wall and the infesting Termites had built a nest from there to the floor. Probably about forty dollars worth of stamps had been eaten and four hundred dollars worth damaged beyond repair.

At the first sign of trouble a postal employee drenched the nest with turpentine and the Termites were a pest of the past. The species appears to be Reticulitermes hesperus. Specimens have been sent to Dr. Snyder for identification; all of the evidence indicates that the stamps were infested before they were stored in the basement.

H.E. Burke.

FORESTER MORSE VISITS PORTLAND.

Assistant District Forester C.B. Morse, in charge of the forest management work on the National Forests of southern Idaho, western Wyoming, Nevada, and northwestern Arizona, was a recent caller in the Portland Office of the Forest Service. Mr. Morse has an unusually keen understanding of forest insect matters and is a firm believer in the need for the expansion of forest insect research. He was particularly interested in the western pine beetle situation in the yellow pine of Oregon, because of the similarity of the problem in southern Idaho. I suspect that field contacts with Keen, Evenden, and Edmonston are partially responsible for the fact that Mr. Morse is so well informed.

A.J.Jaenicke.

SOME NOTES ON TRAP TREE EXPERIMENTS CONDUCTED IN THE EAST AND
SOUTH DURING 1925.

In an endeavor to obtain additional information regarding optimum requirements for successful brood development of certain barkbeetles and borers, two series of trap tree experiments were conducted during 1925; one near the Bent Creek Laboratory, Asheville, North Carolina, and the other at Bogalusa, Louisiana in cooperation with the Great Southern Lumber Company.

At Asheville second growth shortleaf pine was selected for the experiment. The trees averaged about 6" D.B.H., 30' high and 20 years old. At Bogalusa the young trees in a stand of virgin longleaf pine was used. These averaged about 8" D.B.H., 45' high and were from 150 to 200 years old. The trees were prepared monthly. At Asheville, the work started April 1, 1925, and at Bogalusa, December 15, 1924. In the former locality, the trees were treated by felling and removing a log, by bark stripping at breast height, and by barkstripping in several places along the middle stem, by hack girdling or ring girdling, and by saw girdling. In the latter place the trees were treated as the first three ways mentioned above.

With such a difference in the two groups of trees with regard to age, species and possible varying physiological conditions as well as differences in climate and soil, some of the records obtained relating to insect activity were equally variable. The following are a few records which it was thought might be of interest.

1. None of the treatments, either at Asheville or Bogalusa proved to be attractive to Dendroctonus fontalis.
2. At Asheville none of the trees prepared by bark stripping in several places along the middle stem, by saw girdling or by hack girdling were attacked by any insect up to November, 1925. Also that part above the girdle, of trees bark stripped at breast height, was not attacked, but the portion below was attacked. At Bogalusa some of both of the bark stripped and hack girdled trees were attacked both above and below the girdle; a portion of them died by September, 1925.
3. At Asheville the turpentine beetles attacked quite heavily the fresh stumps and logs of the trees felled during April and May; however, the stumps of those trees felled during the next three months only received one attack on each. At Bogalusa only the December and March stumps were attacked and none were attracted to the log sections. None of the trees at either locality were favorable for successful brood development. Some broods developed to fair size larvae before dying, others did not hatch from the eggs.
4. At Asheville the turpentine beetles also attacked that portion of the bark stripped trees that was below the girdle and none of these trees attracted Ips. At Bogalusa some of both the ring girdled and bark stripped trees were attacked by Ips. and borers, both above and below the girdle, and only one was attacked by the turpentine beetle. None of the turpentine beetles in these trees developed successful broods either.

R. A. St. George.

ATTENTION BUGOLOGISTS!*

Chugach timber appears to be as edible to bugs of one kind and another as does some of the species in the States. Insects occur in the north which feed on the foliage of the spruces and hemlocks, and Technical Assistant Lutz recently reported a bark beetle in a pure spruce stand that does its dirty work under the bark. Dendroctonus obesus he calls it. This is a low-sounding name, but nobody on the Chugach protested.

Last spring it was noted that some insect was doing widespread damage to spruce and hemlock foliage, especially on the young growth. This bug, whatever it was, was out in force over a great part of the forest, its presence being reported at places two or three hundred miles apart. This insect has done no permanent damage as yet, but repeated attacks of such intensity as last year's infestation may eventually result in extensive damage.

In the case of the bark beetle recently reported, its presence seems to be confined to small isolated localities here and there, and to pure spruce stands. Supervisor McDonald had noted its presence quite a few years back in the same stand where Lutz ran onto it, and it does not seem to have spread much in the interval. Nevertheless, notes are being kept on these various depredations, and if the thing develops into a real menace the Chugach may have to send out the S.O.S. to the bugologist forces.

L.C.Pratt.

*From the Service Bulletin (Forest Service) of March 15, 1926. The defoliator mentioned in the second paragraph was identified by Heinrich as Peronea variana, the black-headed spruce bud-worm.

A.J.Jaenicke.

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SOME LIKE OUR STUFF.

The May 1 number of the "Western Forest Insect News," issued by your office, has been received in this office. It contains a great deal of very interesting and valuable material and has been read with much interest. I do not know whether this publication is reaching the Forest Supervisors in this District, but if not I think it would be very well worth while if you could send copies to all of them.

District Forester.

RAPID REPRODUCTION.

The following observations made at Ashville, North Carolina, and Bogalusa Louisiana during the season of 1925 indicate the rapidity of the transformations of some forest insects:

Adults of Ips caligraphus, Ips grandicollis and Ips avulsus were active the entire year at Bogalusa, while at Asheville this period extended only from April to November. In the former locality a brood developed in about ten weeks during the mid winter, and in four weeks during mid summer, making it possible for as many as seven or eight generations to develop during the year. At Asheville the generations took from four to six weeks to develop after the season of activity began so that only about four complete generations developed with the beginning of a possible fifth.

Records obtained at Bogalusa show that the southern pine sawyer, Monochamus titillator completed a summer generation in slightly less than 4 months time. Adults emerged before September 21, 1925, from a tree that was felled May 15. This verifies similar observations made by J.L. Wobb in southern Mississippi and Louisiana during 1908 when he noted that many adults had emerged by August 12, from a tree that was felled in April.

R.A. St.George.

CHANCE TO ASSIST IN A GOOD CAUSE.

Prof. W. J. Chamberlin, Forest Entomologist of the Oregon Agricultural College, has in manuscript a work entitled "The Buprestidae of North America North of Mexico". This is a bibliographical catalogue, listing all species known to occur in the United States and Canada. A complete bibliography and the synonymy, type locality, distribution, host plants, records of capture with dates, and the location of specimens of each species is given. There will be approximately 200 pages of quarto size.

The cost of publishing the book will be about \$1,200. To those who order before it is published the price of the book will be \$4.50. Prof. Chamberlin would like to receive enough advance orders to warrant him in going ahead with the publication.

The family Buprestidae contains many species of insects injurious to our most important forest, shade, and ornamental trees. If accessible, information on these species will be a great help to all of those interested in the protection of trees and forests. Order now before you forget it.

H.E. Burke.

ALL FILING SYSTEMS APPEAR SIMILAR

Cocour d'Alene Bootlegger: "The police are after me! Quick, where can I hide?"

Evenden's Stenographer: "Get into the filing cabinet - nobody can find anything there."

CALIFORNIA IN SECOND PLACE.

Mr. Jaenicke's article in the last issue gives us an excellent analysis of the relation of barkbeetle losses to our reserve stands of merchantable yellow pine. The glorious state of California, as in many other things, takes first place as to total volume of virgin yellow pine timber with 67 billion board feet. But when it comes to the amount killed by the western pine beetle, native sons are willing to concede that the palm goes to her sister state of Oregon.

The extensive survey work that Jaenicke has been carrying on for the past five years or more in District 6 gives a very good basis for the estimates of these losses. No such comprehensive survey has been carried out for the California district. In 1917 an organized survey was carried out over about 25% of the yellow pine area of the state in the central and southern Sierra Nevada region. From the data obtained from this survey and subsequent data the annual yellow pine losses from barkbeetles for the entire state have been placed at 125 million board feet. Compared with Jaenicke's estimate of 403 million for Oregon, California seems to be running a very poor second.

A very large part of the California yellow pine belt in the central and southern part of the state has never been subject to severe epidemics because of type conditions. The survey of 1917 was located almost entirely in this type and it is quite probable that the estimates of total annual losses for the state are much too low on this account. There are some very extensive areas of pure yellow pine type in northern California, like the Modoc and Shasta areas, where epidemic conditions compare in intensity with those of southeastern Oregon. However, even after full allowances have been made we are willing to concede that the western pine beetle is the more aggressive in the northern state, Perhaps he is a native Oregonian.

J.M.Miller.

BIG HOLE BASIN AREA SHOWS HIGH INFESTATION.

A 100% cruise of this area which includes at least the lower portions of the Bender, Mussigbrod, and Plymton Creek drainages of the Beaverhead National Forest shows an infestation of from 350 to 500 trees per section. Most of the infested trees occur in large groups but there are many single infested trees scattered throughout the area. The infestation appears to have increased from 300 to 600 per cent during 1925. The infested trees are lodgepole pine and the infesting insect is the mountain pine beetle.

The spotting of infested trees is being pushed as rapidly as possible in order that effective plans can be made for the completion of this seasons work. Buckenroth and Fenger from District 4 and 2 are assisting materially in getting the project under way.

The treating crews which consist of seven men, follow the spotters. The infested trees are felled, the infested length bucked into logs of such size as to be easily handled, the logs are decked into piles, and the piles of logs and the brush burned.

J.C.Evenden.

MORROW RESIGNS.

Earl Morrow, Senior Scientific Aid, with the Palo Alto Laboratory for the past five years has resigned to take up work with the Sierra National Forest. Morrow is a good man and we are sure that he will make good with the Service. Here's wishing him the best there is.

H.E. Burke.

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WHITE PINE WEEVIL INVESTIGATION.

The increasing importance of the white pine weevil as a destructive pest in second growth stands of Eastern white pine and the desire for the production of good clear pine has caused the raising of a fund for a three year's study of the pest. Certain forest landowners in Massachusetts and Connecticut contributed and work began during the spring of 1925. The Harvard Forest placed excellent facilities in the way of experimental grounds and laboratory space at the disposal of the investigators and the Director, Dr. R. E. Fisher, has personally shown great interest and given much assistance in the work.

While it may be said that the work has only begun the observations made during 1925 indicate that with proper methods of forest management the injury can be greatly decreased.

We cannot, however, hope to obtain any method of complete control either for the injury or the insect itself. One fertilized female is sufficient to weevil several leaders and as it is the terminal that is killed except in rare cases when a lateral may be injured, direct control measures can only be carried out on small trees, and even then the cost may be prohibitive.

A large percentage of the young larvae undoubtedly die soon after hatching - probably due to the excess of pitch flowing into the larval mines. Parasites, predators and birds account for a large proportion of the larvae that survive the first week after hatching. While one leader may contain as many as fifty to one hundred eggs, it is doubtful if more than five percent reach maturity. A considerable portion of the past summer was spent studying the parasites and their habits. This work will be carried further next summer.

From the writer's observations, it is believed that pine grown in the proper mixture or grouping with the better hardwoods or hemlock will produce good straight clean logs. Pine grown in mixture also cleans itself better than when in pure stands. Undoubtedly, some of the trees will be weevilled, but the competition for height growth will be so keen that straightening out of a new leader will result in a relatively short time.

H.J. MacAloney.

SUMMER FIELD WORK.

Coeur d'Alene, Idaho. The personnel of the Coeur d'Alene Station took to the field April 20th. All of us are making news but have no time to present it. Control operations are underway for the reduction of mountain pine beetle outbreaks in the white pine stands of the Kootenai and Coeur d'Alene National Forests. Control projects have been started on the Bitterroot and the Beaverhead National Forests to check outbreaks of this insect in merchantable lodge pole pine stands.

J. C. Evenden.

Yellowstone National Park, Wyo. Dr. H.E. Burke will leave June 9th for West Yellowstone, Mont., where headquarters will be established for the field work in the Yellowstone Park. Spraying operations will be conducted against the lodgepole needletyer and the lodgepole sawfly. Biological studies of these pests will be continued and investigations made of the barkbeetle infestations in the Douglas spruce, Engelmann spruce, white bark pine and alpine fir forests.

Kanab, Utah. Dr. M. W. Blackman, Professor of Forest Entomology at the New York State College of Forestry, and Messrs. W.D. Edmonston and Geo. Hofer will spend the summer in the Kaibab National Forest on ecological studies of the Black Hills and other bark beetles.

Portland, Oreg. Mr. A. J. Jaenicke intends to investigate western pine beetle epidemics in yellow pine on the Malheur, Deschutes, Whitman and Mr. Hood National Forests of Oregon and the Wenatche National Forest of Washington. He also intends to complete the general beetle survey of the yellow pine of Oregon and Washington and will make the fifth annual beetle survey of private and federally-owned yellow pine of Klamath and Lake Counties, Oregon, in cooperation with the Klamath Forest Protective Association. If time permits, studies on the control of mountain pine beetle infestations in lodgepole pine on recreational areas at Diamond Lake and Elk lake in southern Oregon will be undertaken.

PALO ALTO, CALIF.

F.P. Keen is now in the field near Klamath Falls working, on the resurvey of the Southern Oregon - Northern California project. He expects to complete this about July 1st and will then return to Palo Alto to work up a manuscript on the forest insects of California which will be published in cooperation with the State Forester.

W.J. Buckhorn and Ralph Miller, a temporary field assistant, who are with Keen, will remain on the project area to collect sample plot data during July and August.

J.E. Patterson expects to complete the control work on the Crater National Park early in June. His headquarters for the remainder of the season will be on the Crater where he will carry on a series of experiments to see if the lodgepole pine about resort areas can be protected against mountain pine beetle attacks.

H.L. Person, assisted by Albert Wagner, is now carrying on a series of

experiments at Northfork, Calif.. This study involves an analysis of all the factors connected with the attack of the western pine beetle on yellow pine. Two dendrographs have been installed and a series of cages in which the beetles are forced to attack trees of varying growth characteristics. Person plans to be at Northfork until August 1st. He will then go to Northern California to carry out some further surveys of cut over lands.

J.M.Miller will meet Dr. Blackman at Ogden on June 4 for the purpose of a brief conference. Miller's headquarters will be at Palo Alto for the season but he plans to spend sometime on the Northfork burn study during June. An examination of the Yosemite areas and the infestation in the Jeffrey pine windfalls on the Inyo National Forest will be made during August and September.

Dr. Craighead expects to arrive in California about July first. In company with Miller he will visit the Northfork studies, the Southern Oregon - Northern California project, the Crater National Park, and the Metolius project near Bend, Oregon. He will then meet Evenden at Missoula about August first. Before returning east he will meet Burke near the Yellowstone and will make a trip to the Black Hills National Forest.

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EFFECT OF RELATIVE HUMIDITY ON FREEZING TEMPERATURES.

Forest entomologists are probably familiar with the article on "The Effect of Environmental Temperatures upon Insect Freezing Points" by Nellie M. Payne and published in the January, 1926, issue of Ecology. The author worked with various oak borers and found that sudden cold waves are capable of killing large numbers of the larvae of various species of these borers. The problem is of special interest in connection with the mortality of larvae of the western pine beetle under similar climatic conditions.

The question of the effect of relative humidity on the freezing point of insects has been raised a number of times. In a letter just received from Miss Payne, she has the following to say regarding relative humidity:

"As far as I know now, within the limits of ability to stand dehydration, the lower the relative humidity, the lower the freezing point. This holds with the insects I have studied so far. It may not hold in some insects which cannot withstand a low relative humidity. Most of my work has been done with larvae, so I would not like to say definitely that adults work the same way. It may be that their freezing points are harder to influence. The relative humidities I have used are 50 per cent, 80 per cent and saturation at temperatures of 15, 22, and 25 degrees centigrade."

Miss Payne is now national research fellow in zoology at the University of Pennsylvania.

A.J.Jaenicke.

NEW METHOD OF BURNING INFESTED LOGS.

In the Big Hole Basin project of the Beaverhead National Forest a new system of the burning treatment has been instituted. The trees are felled and the infested length bucked into 10.16 foot logs. The logs are skidded by a single horse out into small openings or parks, decked at least three high, and burned. Some dry stuff is placed in the bottom layer and when the decks are properly made decks of from 30-40 logs are burned clean. There is no question as to the destruction of the insects and it is believed that the cost of this method will prove to be at least one third cheaper than the method of peeling.

J.C.Evenden.

CURRENT LITERATURE

- 1926 Baldur, W.V. - On the Habits and Development of a Checkered Beetle (*Cymatodera undulata* Say. *Cloridae*). Trans. Amer. Ent. Soc., No.1, Vol. LII, pp. 29-37, March, 1926.
- 1925 Knoll, J.N. - The Buprestidae of Pennsylvania (Coleoptera). Ohio State Univ. Studies, No. II, Vol. II, Dec. 15, 1925. An illustrated study with keys, descriptions, notes on food plants, distribution and habits, and bibliography.
- 1926 Van Dyke, E.C. - Certain Peculiarities of the Coleopterous Fauna of the Pacific Northwest, Ann. Ent. Soc. of Amer., No. I, Vol. XIX, pp 1-12.

GENERAL CONFERENCE OF FOREST INSECT WORKERS IN 1927?

Dr. J.M. Swaine, Canadian Forest Entomologist, suggests that the fall of 1927 will be an opportune time to hold a general conference of forest insect workers. We emphatically agree with him. By that time most of our new theories of forest insect control will either be weighed and found wanting or be thoroughly established. We owe it to the lumbermen and timber owners to come to some definite conclusions on forest insect work so that we can tell them what to do and what they can expect when they do it. We owe it to ourselves to get together and get acquainted with our fellow workers so that we may better understand one another and one another's work. Last, but not least, we owe it to our families and to the outside world to get together and have a general good time so that the grouch obtained from advancing years and close confinement to one pet line of work may be eliminated or at least considerably mitigated.

H.E. Burke.